

although *syene* is closer to *isidora* than to *callidryas*, the latter differing from the previous two species in having the first three subcostal veins of the forewing anastomosing with the costal vein, and also in the female having a tail at vein 4 of the hindwing.

- Forewing with the outer margin broadly convex before a slight emargination at the apex; the fourth subcostal vein of the forewing ending in the apex; colouring of wings upperside velvety black with red markings

tribe SIDERONINI *tribus n.*

(Type-genus: *Siderone* Hübner, 1823, *Samml. exot. Schm.* vol. 2, pl. 56; type-species: *S. ide* Hübner, 1823). This tribe consists of only one genus which contains several good species, although Comstock (1961, p. 27), contrary to Röber (1916), said *Siderone* "only includes one highly variable species".

(To be continued)

A Review of the Butterflies in the Bristol Area

(Continued from p 240)

By A. D. R. Brown

Callophrys rubi Linn. (Green Hairstreak)

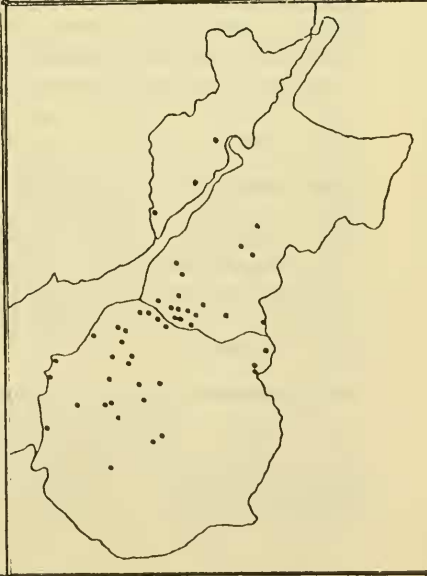
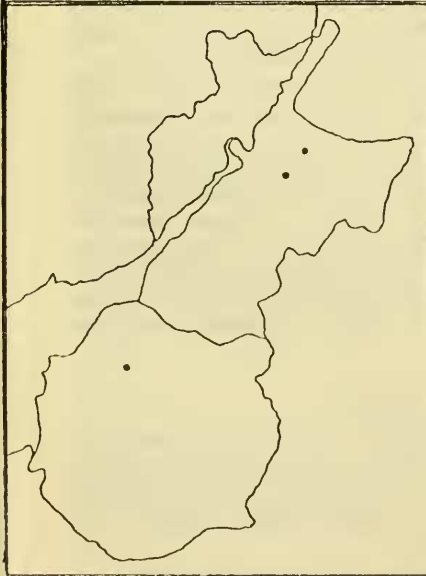
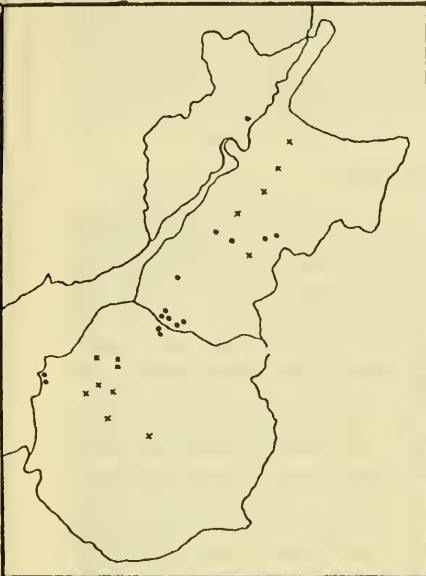
We have records from thirteen localities, but no doubt many more exist owing to the fact that this species is easily overlooked. Where it does occur it is rarely plentiful, and in some places it is on the decline. One of these is Priddy in the Mendip Hills where it was quite common at one time, but the effects of the Forestry Commission are beginning to be felt. At Wetmoor in West Gloucestershire it is protected along with many other species, and small numbers are seen there each year. The Green Hairstreak is often observed at Goblin Combe but only in ones and twos. Many fresh discoveries of colonies in the Cotswolds have recently been made, as well as others in the Mendip Hills.

Strymon w-album Knoch (White Letter Hairstreak)

This butterfly has recently been discovered in several places within Bristol itself, which is a very good sign. On either side of the Avon Gorge, this species has been seen from time to time, but mostly high up in the Wych Elm trees. In 1966, a larva was beaten from a low branch of one of these trees, and later on a butterfly was seen on some nearby bramble blossom. To the north of Bristol not far from Henbury, specimens have been noted much more frequently, and various evidence points to the fact that it may be on the increase. At Whorlebury Hill near Weston-super-Mare, single specimens have been found occasionally, not only as adults but also as larvae, and once a pupa. However, it often appears to be absent from this locality.

- *Strymon w-album* Knoch.
(White letter hairstreak)
- × *Callophrys rubi* L.
(Green hairstreak)

- *Thecla quercus* L.
(Purple hairstreak)
- × *Thecla betulae* L.
(Brown hairstreak)



Hamearis lucina L.
(Duke of Bergundy fritillary)

Anthocharis cardamines L.
(Orange tip)

In West Gloucestershire, the White Letter Hairstreak has recently been found in many new localities in the Cotswold Hills as well as in some of the unspoilt areas between there and the Severn Estuary. Further north near Gloucester City, larvae have sometimes been collected from small Wych Elm trees on the side of a railway bank. It undoubtedly flourishes at many places in the Forest of Dean, but these have yet to be discovered. From all the material we have gathered it is quite clear that this species is well established in the Bristol area, and is at present in no kind of danger.

Thecla quercus Linn. (Purple Hairstreak)

The Purple Hairstreak is quite scarce in the Bristol district as opposed to the previous species, not only in its distribution but also in its numbers. Perhaps the best locality for it is in the Polden Hills, situated south of the Somerset moors. On the southern sides of these hills are extensive oak woodlands, which merge with open grassland towards the top, and it is in this region that the Purple Hairstreak has been found. We have no records of adult butterflies on the wing, only of larvae which have been beaten from the smaller oak trees. From time to time this species has turned up in considerable numbers near Goblin Combe, but none have been noted in recent years. In 1964, a single specimen was seen in some woods near Weston-super-Mare, but none have appeared since that time. Up to 1965, larvae and adults were occasionally found in Leigh Woods on the Somerset side of the Avon Gorge, and it is likely that this species still occurs there. The opening of a nature reserve was recently announced for this area.

As far as West Gloucestershire is concerned, we have very little information to work on. In 1965, the author dislodged a solitary larva in an oak wood near Lydney in the Forest of Dean, but despite that being the only record that we have, it is highly probable that it occurs elsewhere in that region, perhaps quite commonly. Observations from two places near the Bristol boundary have been received, but its prospects of survival look pretty grim. The chief problem with this attractive little butterfly, in the Bristol district at any rate, is the availability of suitable habitats, which are rapidly being reduced in number.

Thecla betulae Linn. (Brown Hairstreak)

The only locality that we know of where this butterfly occurs, is also in the Polden Hills in North Somerset. Here, from time to time, the larvae have been beaten from the small Blackthorn bushes, sometimes in considerable numbers, but no adults have ever been recorded.

There are many likely looking haunts all over the two vice-counties, but despite regular searches no discoveries have been made.

PIERIDAE

Pieris brassicae Linn. (Large White)

This butterfly is usually common in both broods, and remains on the wing until late in October. The peak emergence of the first generation occurs in early June, but in 1964, this took place in mid-May. Likewise, the second generation reaches its peak in September, but during that year it occurred in late July. On 3rd June of this year (1970) no fewer than fifty specimens were observed moving east for Sand Point on the North Somerset coast.

Pieris rapae Linn. (Small White)

The Small White is much more common than the previous species, and generally stays on the wing longer during the second brood. The butterflies are on the wing in nearly every month between April and October, and the various generations are difficult to distinguish owing to this fact.

Pieris napi Linn. (Green-Veined White)

Unlike the two species just described the Green-veined White is more limited in its distribution, since it usually requires damp conditions in which to breed. Up until 1964, this butterfly was very common in most suitable areas, but numbers were down the following year. In 1966, it had regained strength and during the second generation, hundreds of specimens were noted around the marshy areas near Priddy in the Mendip Hills. A similar situation occurred again in 1969.

In central West Gloucestershire, the first brood exhibits some superb female examples, in which the typical black markings on the tips of the forewings merge into a soft grey hue on the inside, and the veins on the upperside are also grey in colour.

Anthocharis cardamines Linn. (Orange Tip)

This species is widely distributed all over the two vice-counties, and can even be found within Bristol itself. Our records point to the fact that the Orange Tip is on the increase, particularly since 1968, and the reason for this may be the restraint in using weedkillers along roadside verges where its foodplant abounds. In 1968, the emerging period was cut in half by a prolonged cold spell, and it was thought that this would have adverse effects on the resulting generation, but this proved not to be the case. Earlier, in 1967, a superb gynandrous specimen (mostly female) was captured near Wickwar in West Gloucestershire by the late D. G. Gibb.

The prospects for the Orange Tip in the Bristol district look quite good at the present time, and we hope that the situation will improve even further.

Leptidea sinapis Linn. (Wood White)

Although no actual recordings have been sent in to us, we know for certain that this rare and local butterfly exists in

reasonable numbers at a remote locality in the Forest of Dean. The chances are that it occurs in many other places too, but as yet we have no knowledge of these.

Colias croceus Fourc. (Clouded Yellow)

The West of England does not appear to get its fair share of the Clouded Yellow, as do the South and East. The majority of our records are from North Somerset only, and even then just isolated specimens have been noted on the wing. Of these, most are of the second generation. In 1964, this species was far more numerous in the Bristol area, particularly during August and September, when up to three butterflies would be seen in any one day. In June of 1967, the author caught a very battered female specimen at Wetmoor in Gloucestershire, from which over one hundred ova were obtained. The larvae were successfully reared and the adult butterflies started emerging in August, with a substantial number of *ab. helice*. Single specimens were observed at regular intervals during October 1969 at Sand Bay near Weston-super-Mare in Somerset, the last of which was noted on 17th October. So far, we only have one record for 1970, and that is from the same locality.

Gonepteryx rhamni Linn. (Brimstone)

The Brimstone is widely distributed all over the Bristol area, but is rarely common. Only on very seldom occasions do we hear of more than about eight butterflies having been seen on a particular day. Its foodplant, the Buckthorn, is quite scarce and to this may be attributed the small numbers of butterflies in the district. Nevertheless, we receive sufficient reports each year, showing that this species is not yet in a critical situation. The earliest observation over the past nine years is of a male butterfly seen on the Bristol side of the Avon Gorge on the 11th March 1965, while the latest was one observed on the 17th October 1969 at Sand Point in Somerset.

HESPERIIDAE

Erynnis tages Linn. (Dingy Skipper)

There is little to say about this somewhat drab and 'overlooked' butterfly. It appears to be holding its own in both vice-counties, being quite abundant in some places; we have records of eight localities in W. Glos. and sixteen in N. Somerset. In May 1965, the author captured an unusual variety of this species, with broad radiations across the forewings—(*Entomologist's Record*, **82**: 253.).

Pyrgus malvae Linn. (Grizzled Skipper)

The Grizzled Skipper is much more sparsely distributed in the Bristol area than the previous species. It has only been observed in ones and twos, with the exception of a few special haunts; in 1965 it was quite common in Michael Wood, West Gloucestershire, but as mentioned earlier this locality has been

largely destroyed by motorway development. At nearby Wetmoor, where the habitat is being protected, it can still be seen in reasonable numbers every year. At Priddy in Somerset, which is one of the old lead mining villages, the butterfly was seen flying in strength along the semi-overgrown tracks through the Forestry Commission's pine plantations, although this strength has depreciated in more recent times. Once again, Goblin Combe appears to be the metropolis for this species in North Somerset, where it is common every year. A few years ago, a systematic search was made here for examples of *ab. taras* Meigen, but none were forthcoming.

Thymelicus sylvestris Poda (Small Skipper)

This species occurs in almost any suitable habitat throughout West Gloucestershire and North Somerset, including several localities within Bristol City itself. It is nearly always common wherever it is found, and is frequently quite abundant.

Ochlodes venata Br. & Grey (Large Skipper)

The Large Skipper is widely distributed like its cousin the Small Skipper (*Thymelicus sylvestris* Poda), but is not usually so common. During 1968, butterflies stayed on the wing later than is normally the case, and were still abundant at a locality in Bristol on 23rd August.

Conclusions

From the foregoing report it is clear that we have a fair selection of butterfly species in the Bristol area, but that many of the strongest colonies are severely threatened, not by collectors, but by various types of commercial and agricultural development. In a few instances tourism could be the cause of population reductions, but by and large it is the destruction of natural habitats. Fortunately, some of the areas mentioned now form nature reserves, where the rarer species are protected.

Looking from a more optimistic point of view, much work has yet to be done in relatively unexplored regions, such as the Forest of Dean, where there is great potential for the keen entomologist and conservationist. Without doubt, many local colonies remain undiscovered, and it is our duty to guard and protect any newly-found 'gems' from the ravaging hunger and greed of industrial enterprises. Let us wake up to this critical situation and do something about it before it is too late.

REFERENCES

- Burton, J. F., 1964. Lepidoptera notes, Bristol District, 1964. Proceedings, Bristol Nat. Soc. Vol. 31.
 Cooper, J. E., 1965. Lepidoptera notes, Bristol District, 1965. Proceedings, Bristol Nat. Soc. Vol. 31.
 Foxwell, D. J., 1966. Lepidoptera notes, Bristol District, 1966. Proceedings, Bristol Nat. Soc. Vol. 31.

- Brown, A. D. R., 1967. Lepidoptera notes, Bristol District, 1967. Proceedings, Bristol Nat. Soc. Vol. 31.
- Brown, A. D. R., 1968. Lepidoptera notes, Bristol District, 1968. Proceedings, Bristol Nat. Soc. Vol. 31.
- Brown, A. D. R., 1969. Lepidoptera notes, Bristol District, 1969. Proceedings, Bristol Nat. Soc. Vol. 31.

A Note on the existence of Temporal Isolation in Satyrid Butterflies

By JOHN H. MASTERS

George Thomson's article (*Ent. Record*, **83**: 87-90, 1971) concerning the possibility of temporal sub-speciation in *Maniola jurtina* (Linnaeus) brings to mind one known example of temporal isolation of two subspecies in the same locality and is related in kind with some studies that I have had underway for a number of years with populations of certain North American satyrid butterflies.

At Churchill, Manitoba, two subspecies of *Oeneis jutta* (Hübner) ostensibly occur together with temporal isolation. *Oeneis jutta* is one of several species of the genera *Oeneis* and *Erebia* which have biennial life-cycles and fly only in alternate years. Churchill is located right at the northern limit of the tree line and I have observed that *Oeneis jutta ridingiana* Chermock & Chermock is found here, principally in the taiga zone in even-numbered years, and that *Oeneis jutta alaskensis* (Holland) is also found here, principally on the open tundra (*Eriophorum* associations) in odd-numbered years. This cannot be construed as a case of temporal isolation having led to sub-speciation but instead is a case of temporal isolation maintaining two subspecies in otherwise geographic sympatric situations. It should be further noted that the temporal isolation of these two subspecies at Churchill is not complete for a certain degree of intergradation is noticeable in specimens from there.

Thomson's observations deal with a univoltine species (*M. jurtina*) which has a very long emergence and flight period of up to seven months in some areas. It is his contention that butterflies emerging at the opposite ends of this long flight period are temporarily isolated from each other and in the case of *M. jurtina* we are possibly seeing the very early stages in the formation of temporal subspecies. These observations with *M. jurtina* may be more closely related to studies that have been underway by Charles Remington, Arthur Shapiro, Harry Clench and other workers with another North American satyrid, *Euptychia cymela* (Cramer), which is univoltine, but in some localities exhibits a distinct 2nd brood. The 2nd brood emerges after the earlier brood has waned, but altogether too